

TOSCO DEVELOPMENT CORPORATION

1600 BROADWAY
DENVER, COLORADO 80202
(303) 831-4567

JIM

MAY 24 1982

May 21, 1982

RECEIVED
MAY 21 1982

DIVISION OF
OIL, GAS & MINING

Mr. James W. Smith, Jr.
Coordinator of Mined Land Development
State of Utah Natural Resources & Energy
Division of Oil, Gas, and Mining
4241 State Office Building
Salt Lake City, Utah 84114

Reference: ACT/047/001

Dear Jim:

I am enclosing answers to the Division's questions regarding our application for the Sand Wash Development Shaft and Mine. Since these have been keyed to the Division's questions, we have also included a copy of the attachment to your letter of April 7, 1982 with the reference numbers added.

This letter and the Attachments may be incorporated, as an Appendix, in Tosco's application. One of the responses involves a change in a number in the text. Therefore a substitute page has been provided (page 66).

I am quite pleased that Sally and Division staff found time to review the Sand Wash site with messrs. King and Merino. I apologize for not attending myself. I understand that some of the responses in Attachment I were briefly discussed during the site review. If I have clouded the understandings previously gained, please call me. If any other responses are, in your opinion, not sufficient, I would appreciate the opportunity to meet with you or Sally early next week to expedite the review process. If possible, please schedule the tentative approval review for the Sand Wash Project at the next monthly Board meeting.

Recognizing your hectic schedule and work load, Tosco sincerely appreciates the Division's continuing efforts to complete the review.

Sincerely,

John E. Hardaway
John E. Hardaway
Manager Regulatory Affairs

JEH:jc

Attachments: (2) A/S

cc: Sally Kefer (w/attachments)

Attachment I

Response to State of Utah Request (April 7, 1982)
for Additional Information on Development Shaft Application
Numbers are aligned in order of appearance in State request

1. The pipeline route, to be determined by the gas supplier, will be provided to the Division when it has been identified. The gas suppliers will be responsible for obtaining necessary approvals (page 46 of Application).
2. Oil shale mining, to be conducted at a depth of about 2000 feet, will not affect gilsonite mining since that mining is conducted at shallower depths. No gilsonite veins are known to exist in the mine facilities area. No mining of gilsonite is taking place on the Tosco lease areas included in this Notice. No surface facilities are proposed over gilsonite deposits.
3. Water quality data for the Birds' Nest aquifer indicate a wide range of concentrations. The data collection and analysis is continuing and the results of the analysis will be made available as they are verified. The zone which may contain this water will not be encountered until about 18 months after construction on the shaft begins and about 22 months after grading begins.
4. Any reseeding or planting will be based on site-specific designs. The entire 39.1 acre area may not be disturbed and thus some areas may not require reclamation. Procedures and species will vary to achieve the requirements of 70 percent of the existing cover of the representative vegetation communities surrounding the mine. Vegetation cover over the areas that will be disturbed varies widely. Similarly, soils vary greatly. A single, specific standard for revegetation success is likely not applicable to the 39.1 acres of disturbance. Where poor soils or areas of essentially no soils are encountered, the degree of reclamation on these sites is determined by the subsequent availability of suitable soils.

Areas which presently have no vegetation may or may not be suitable, after operations, for revegetation. All areas will be made as suitable as possible for encroachment of native vegetation. The actual standards for success will be based on specific delineations of vegetation communities and soil associations quantified prior to shaft construction.

- 5a. Clay materials may have to be imported to provide the liner. However, core holes show that impermeable clay materials exist on site. The bedrock under the ponds consists of hard, well-cemented claystone. In-place permeability test conducted within this material gave permeabilities of 2×10^{-5} to less

than 1×10^{-7} cm/sec. Tosco has also identified a borrow area for this type of impermeable material within the mine site. The same type of testing conducted on freshly-exposed claystone which could be used for embankment construction indicated permeabilities of 1×10^{-8} cm/sec. It should be kept in mind that the liner may not be needed if water quality is acceptable.

- 5b. The channels are designed to safely pass flows with a velocity of 2.5 fps. No need for special velocity control measures is anticipated.
- 5c. The narrative is essentially correct. The sediment pond will be oversized and no discharge will occur from events less than the 10-year, 24-hour event.
- 5d. If reinjection becomes necessary, adequate water quality must be maintained to maintain an acceptable reinjection rate. Of principle concern would be suspended sediment and materials that may create a build up over the well screen. The quantity of muck drainage water is expected to be small compared to potential mine water inflow and is not expected to adversely affect the mine water. But, if an adverse effect on suspended sediment content is projected and since the quantity is small, the muck drainage can be kept separate. Until the need exists to obtain authorization to reinject or otherwise discharge the water (which may occur 22 months after site grading) there is no need to separate the streams. Drainage from the coarse ore, caused by precipitation and therefore also a small amount, is not expected to affect the quality of water in the pond. The ore stored in the coarse ore stockpile is run-of-the-mine material with a nominal maximum size of 12 inches. Oil shale is not readily weathered. Thus little, if any, suspended solids or biological contaminants are expected. Detention time is expected to be more than adequate to settle solids. Other techniques to reduce solids are available, if required. Though it is likely obvious, we point out that the quality of the ground water, in terms of dissolved components, is poor.
- 6a. It is assumed that the Division is concerned over the transport of suitable plant growth materials from the stockpile to the sedimentation pond and subsequent contamination of the soil. Since the soil stockpile will be stabilized, since the soils typically contain large amounts of coarse material, and since precipitation is low, the probability of erosion is low and a requirement to berm the soil stockpile may be excessive. On the other hand, if berming is demonstrated to be economically effective, it can be used. We do not expect contaminated materials to reach the sediment pond and thus it should not be necessary to prohibit all movement of suitable soils into the pond since they can be recovered and used (see 6b)

- 6b. The material accumulating in the sediment pond would be tested, as would any soil material, if adequate amounts for reclamation are collected. The material should not be contaminated with oil and grease since such materials should not be disposed of in the drainage area. In the unlikely event soils are contaminated, they may be buried or disposed of in an approved solid waste disposal facility located off-site.
7. The total area subject to disturbance, and which is drained either to the sediment pond or to the mine water retention pond, is 39.1 acres. Not all of this area will have mine support facilities. Some of the area may be affected only during construction. For example, some areas will be affected by construction of the dams and likely will not be disturbed again. Certain intervening areas may not be disturbed at all. It is thus possible that fewer than 40 acres will require reclamation. The reclamation bond has been calculated on the basis of reclaiming 40 acres. The application commits Tosco to confining disturbance to the designated area -- unless, of course, an amendment is filed with DOGM and approved. A specific soils materials balance will depend on a number of variables which will be defined as construction activities are initiated. The soil survey conducted to date will be finished by obtaining site-specific depths of materials. Final calculations regarding the suitable materials will then be completed. Soil removal and stockpiling operations will be properly supervised to ensure protection of suitable material.
8. The North Wash baseline data collection station is located on North Wash, about 2 miles upstream of its mouth. This station is Station 09306880 of the USGS data collection system. Tosco collects the data. Its location is shown in Figures 2.5-1 and 2.5-2.
- 9a. Suitable soil material encountered during road construction will be utilized as necessary to enhance invasion of native species into regraded areas located away from the roadway or, possibly, stockpiled at the mine site.
- b. It must be kept in mind that the soils of the Sand Wash area are, typically, of poor quality when compared to many other areas. The suitability of local soils to enhance land stability and postmining uses is a site specific determination. Soil suitability is more a function of soil thickness at Sand Wash than other chemical factors. Those soils to be stockpiled will be determined by a qualified professional, preceeding earth-disturbing activities.

The exchangeable sodium content has not been described for the soils. While it is true that soils such as the CaC complex appear to be "problem soils" when compared to other areas of

Utah, the soil is somewhat typical of the Sand Wash Project area. The CaC soils and subsoil will not be a hinderance to revegetation. In 1976, Tosco established revegetation plots at Sand Wash on CaC soils and subsoils. These plantings have been successful.

The design capacity of the topsoil storage area is 28,000 cubic yards. The major areas of disturbance would yield about this much material (p. 20). If additional area is required, adequate space is available to design and support a request for an amendment of the Notice. It is expected that DOGM would be able to respond immediately to a request to enlarge a soil stockpile in the Sand Wash Project area.

- c. It is unlikely that sufficient soil exists in the area of the coarse ore stockpile to require removal. This area is located in the extreme upper headwaters of North Wash. If removal of soil is justified, removal will preceed disturbance. If the sequence of disturbance requires removal after initial stabilization of the soil stockpile, the stockpile will be restabilized.
- d. The soil stockpile will be stabilized in a manner that minimizes loss of suitable soil. If excessive erosion occurs before the pile is adequately stabilized, "temporary" methods will be used where effective.
- e. The Soil Conservation Service reports suggest that the AkC and EkD complexes are 20 and 12 inches in average thickness of viable material. The Project is designed to remove the maximum amount of suitable material necessary and effective for reclamation. Section 5.3.1 should read 0 to 20" (page 66).
- 10. Grubbed vegetation will be removed with suitable soils, bladed into fills where fill stability is not imparied, or may be windrowed to help control erosion. There is very little vegetation in the mine shaft area.
- 11. The sedimentary materials to be encountered in the shaft belong to the Uinta and Upper Green River Formations. Thus shales, sandstones, siltstones and marlstones are the predominant material. The material from the Uinta Fm will be the same as the present surface rocks and the Green River will be the same as in surface exposures along Willow Creek, a few miles southwest of the project site.

There is no evidence of toxic materials, especially with regard to sodium or other salts, in the context of the Sand Wash site. Site-specific analyses may be conducted, as necessary, during excavation if waste rock is to be placed in a situation where it would affect vegetation.

- 12a. Item #3 on page 3 of Form MR 2 lists the important species to be considered first in the reclamation program. These are all but two species listed in Table 5.3-1. The other species (needle and thread and intermediate wheat grasses) will continue to be evaluated and will be used if suitable and available from the proper sources.
- b. The mulching rate is expected to be about 2000# per acre. The rate shown on Item 2 on page 3 of Form MR2 should be changed to "about 2000 lbs". The need for site-specific determinations of mulching rates is noted on page 15, item 47, of the check list. Soil tests would be conducted to determine the need for amendments prior to final reclamation or revegetation. The possible, temporary requirement for available nitrogen to replace that used in decay of organics is recognized. The hydroseeding rate is given as 30 pounds (pure live seed) per acre.
- c. Tosco proposes to stabilize the coarse ore stockpile (page 64). Tosco hopes to proceed to the commercial phase of the Sand Wash Project, in cooperation with the State of Utah and to process the shale at some later date. Thus Tosco hopes it will not be necessary to reclaim the pile. However, Tosco is committed to reclaim the coarse ore pile as proposed. It must be remembered that this is benign material, just like the talus-like material excavated by the Bureau of Mines at Anvil Points and dumped as talus. The material is similar to outcrop material. Once an adequate soil-like medium is created on the near-surface material, a suitable medium for vegetation would be created. A need to conduct test plot work has not been identified.
13. In our forwarding letter to the Division, we indicated that we would like to discuss annual phasing of the bond, if this approach is acceptable. The reclamation will follow cessation of operations in mid-1987 (pp 3,29, Fig 3.1-2). Grading will be conducted whenever temperature and moisture conditions are suitable. The necessary revegetation procedures would be conducted at the first seasonal opportunity. The preferred planting season would be the Fall. However, the planting would be in the Spring if lands are graded and prepared after a Fall planting time. No summer planting is envisioned because of historical lack of access.
14. No drill holes are proposed as part of this plan. Monitoring stations are covered under a previous exploration Notice.
15. The coarse ore stockpile will be appropriately graded and prepared as necessary to maintain appropriate stability. Section 5.3 discusses surface preparation of all disturbed areas and does not distinguish between the coarse ore stockpile and the other disturbed areas. On page 70 the coarse ore stockpile is more specifically addressed.

16. The maximum depth of the fill at the surface facilities will be about 22 feet. The fill will be stabilized to ensure support of the mine facilities. The exposed sides of the fill will be graded to 4(h):(v). Natural topographic grades in the areas of fill are quite low. Long-term geotechnical stability is assured. Long-term erosional stability will be properly controlled with low slopes, vegetation where suitable, and talus material.

Attachment II

5.3 Revegetation

5.3.1 Soil Stockpiling

Friable surface materials (including available A and B horizons and unconsolidated subsoils) will be scraped from the project site prior to construction and stockpiled. These soils are expected to vary in depth from 0-20". Based upon the surveys conducted (Section 3), it is not anticipated that any toxic materials or other materials unsuitable for reclamation activities will be encountered.

The stockpiled surface will be temporarily stabilized and protected from wind erosion and water erosion by seeding with suitable grass species. Suitable species include Indian ricegrass (Oryzopsis hymenoides), galleta grass (Hilaria jasmesii), and Needle and thread grass (Stipa comata), all of which are native to the Sand Wash site. The above species will provide adequate cover and protection from erosion over the short time period the stockpile is in place.

5.3.2 Surface Preparation

Once the project site has been decommissioned and shaped, previously stockpiled topsoil materials will be spread over the surface. Although it is estimated that nitrogen and

TOSCO PERMIT REVIEW

M-3(1)(b)

The route of the proposed Mountain Fuel pipeline should be submitted to the Division when finalized.

M-3(2)(a)

Tosco should provide a narrative on how the mining of oil shale will affect the recovery of gilsonite which exists on the property.

M-3(1)(d)

The Division requests that a copy of the water quality data for the sample from the Upper Bird's Nest Aquifer be submitted as soon as available (page 29, Permit Application).

M-3(2)

The applicant gave a wide range as the percent cover for vegetation. The applicant should chose a specific standard for revegetation success which should be chosen and justified by data collected on site. Will the entire area be reseeded in the same manner? There are three different habitat types in the area. Will areas currently labeled nonvegetated be reclaimed?

M-10

The soil for the water retention pond embankment and that to be utilized as floor "liner" material is identified as impermeable. From where will this material be obtained? What are the characteristics which render it impermeable? (page 56, Permit Application)

The applicant should specify the velocity control measures to be utilized on the retention pond inlet areas.

The Division understands the following to be true for the drainage control plan:

A 15 ac-ft capacity mine water retention pond will be constructed and operated for the treatment of runoff from the coarse ore stockpile, shaft construction muck drainage and an area northeast of the topsoil stockpile. The pond size is based on a maximum ground water flow of 560 gpm/day with an approximate six-day detention capacity. Tosco will grout off as much flow as possible depending on the success of such an effort. Water from the pond will be evaporated although there will be an emergency discharge spillway provided which safely passes the peak flow of the 100-year event. Although it is to be used as an evaporation pond

initially, at some point in the future, Tosco may begin reinjection of the water in the retention pond into the Bird's Nest Aquifer. A sediment pond will be constructed and operated for all other disturbed area runoff. If the chemical characteristics of the coarse ore runoff prove to be similar to natural surface flows, then such runoff will be routed through the sediment pond and discharged.

Some concerns of the Division regarding the drainage control plan which should be addressed, include:

If reinjection of water from the retention pond is planned, can Tosco assure that the quality is not degraded by the muck drainage and coarse ore runoff prior to reinjection? What effect will the detention time have on the TSS quality of water to be reinjected?

M-3(2)(c)

The topsoil storage area should be bermed rather than drained through surface ditches into the sediment pond to prevent excessive topsoil loss. The material which accumulates in the sediment pond should be analyzed to prove it does not adversely affect revegetation potential prior to mixing with the topsoil stockpile. Otherwise, it should be stored separately, as it is derived from heavy operational areas and may be contaminated with oil and grease. If it is so contaminated, how will the operator dispose of it?

M-3(1)(l)

It is unclear to the reviewer as to the total area to be disturbed within the permit area as the acreage provided for each facility mentioned does not total 39.1 acres. Will 26 acres be reclaimed or 39? Soil removal is proposed from 16 acres. A materials balance which includes the area to be disturbed, volume of soil removed and volume to be returned would clarify this situation.

M-3(1)(h)

The applicant should specify the location of the monitoring point "downstream and near the mouth of North Wash." Is it on North Wash or on the White River?

M-10

The new two mile access road will be constructed and maintained for future access to leases. Why was soil removal not proposed for this road?

It is stated on page 51 of the application that most of the 28,000 cubic yards of soil to be stored in a 2.1 acre area will come from two complexes. The applicant states in Section 3.1 that some CaC soil will be removed. How will Tosco decide on where and how much of this soil will be removed? What does an "exchangeable sodium content" of 15 for the CaC imply? Is this an ESP, SAR or percentage of CEC analysis? Initial indications lead the reviewer to believe this soil will be a hinderance to the establishment of vegetation or contaminate other stored soils. How will this material be stored? Similarly, some removal of the BS complex is proposed along the drainage channel. Will the volume removed be stored in the 2.1 acre area? Is there adequate storage room in the 2.1 acre area?

Will topsoil be removed just prior to Phase IV in the coarse ore stockpile area? If so, how will storage and revegetation measures coincide with those of Phase I in order to minimize disturbance?

The applicant has committed to establishing vegetation on the topsoil stockpile. Will temporary methods be employed in the interim to prevent erosion?

Section 2.3.4 indicates the depth of the AkC and EkD complexes to be 20 and 12 inches, respectively. In Section 5.3.1, the applicant states that the depth of soils to be saved range between 2 and 12 inches. Please clarify.

M-3(2)(c)

How will grubbed vegetation be disposed of?

M-10(6)

Have the waste rock and muck materials been analyzed for toxicity to assure safety in surface disposal?

M-10-12

The revegetation species list in the MR 2 Form and Table 5.3-1 are not the same. Please clarify the discrepancies.

The applicant gave two different mulching rates, please clarify. The application of straw often tends to decrease the nitrogen levels in soils. Has any effort been directed toward compensating such a loss? The hydroseeding rate provided was 30 lbs acre. Is this in Pure Live Seed (PLS)? The drilled rate should be about one half of this value.

Tosco may want to propose test plots on the coarse ore stockpile or use data from the Colorado test plots to show revegetation potential.

M-3(2)(f)

A specific timetable for reclamation has not been included in the plan and should be included as a checklist against bond costs.

M-10(2)(c)

Tosco should provide a commitment to the plugging of drill holes and final reclamation of monitor station areas.

M-10-12

In the MR 2 checklist, the applicant states that the coarse ore will be covered with suitable plant growth material and revegetated to achieve maximum stability (comment 38). However, in Section 5.2.1, no mention is made of covering the coarse ore prior to revegetation. Please clarify.

M-3(2)(c)

Applicant should further describe the measures to be incurred on those pads where waste rock and muck are utilized to assure longterm stability of the material.

HIST.



SCOTT M. MATHESON
GOVERNOR



STATE OF UTAH
DEPARTMENT OF COMMUNITY AND
ECONOMIC DEVELOPMENT

Division of
State History
(UTAH STATE HISTORICAL SOCIETY)

MELVIN T. SMITH, DIRECTOR
300 RIO GRANDE
SALT LAKE CITY, UTAH 84101
TELEPHONE 801 / 533-5755

February 10, 1982

Mr. Jim Smith
Division of Oil, Gas, & Mining
1588 West North Temple
Salt Lake City, Utah 84116

Attention: Sally Keefer

Re: Sand Wash Development Shaft and Mine Project, Tosco
Development

Dear Jim:

The staff of the Utah State Historic Preservation Officer has received the State Action form for Sand Wash Development Shaft and Mine Project, Tosco Development.

After review of the state's cultural resource file, there have been located a total of five cultural resources in the northwest corner of Section 35. Our office cannot determine from the information presented whether or not these cultural resources may be in the project area.

If further information is needed concerning these sites, our office would be happy to furnish it to you and consult with you on the Division of Oil, Gas, and Mining's determination of eligibility and effect.

If you have any questions or concerns, contact Jim Dykman at 533-7039.

Sincerely,

for Melvin T. Smith
Director and
State Historic Preservation Officer

JLD:10 E835/2007c